

CLAIMS

1. A method for detecting a target double stranded DNA, which comprises the steps of:

- 5 - hybridizing the target double stranded DNA with a single stranded PNA (peptide nucleic acid) which is complementary to the whole or a part of the target DNA; and
- measuring the degree of hybridization at the presence of a denaturing agent.

10 2. A method according to claim 1, which further comprises, prior to the hybridization step, the step of amplifying a target nucleotide sequence by PCR to obtain the double stranded DNA.

15 3. A method according to claim 1, wherein the measuring step is carried out by using a surface plasmon resonance biosensor.

20 4. A method according to claim 3, wherein the single stranded PNA is immobilized on a measuring chip of the surface plasmon resonance biosensor.

5. A method according to claim 1, wherein the measuring step is carried out at a temperature not exceeding 40°C.

25 6. A method according to claim 1, wherein the denaturing agent is formamide.

7. A method according to claim 1, wherein two or more target double stranded DNA are detected.

30 8. A method according to claim 1, wherein the target double stranded DNA is obtained by amplifying a DNA selected from the group consisting of genome DNAs of Escherichia coli O-157, Vibrio parahaemolyticus, and Salmonella.

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9. A method for detecting Esherichia coli O-157, which comprises the steps of:

- amplifying a genome DNA of Esherichia coli O-157 by PCR to obtain a double stranded DNA;
- 5 - hybridizing the double stranded DNA with a single stranded PNA which has the same sequence as at least 15 consecutive nucleotides of the nucleotide sequence of SEQ ID NO: 1; and
- measuring the degree of hybridization at the presence of a denaturing agent.

10. A method according to claim 9, wherein the amplifying step is carried out by using a sense primer selected from SEQ ID NOS. 4, 5, 7, 8, and 9 and an antisense primer of SEQ ID NO.6.

15. 11. A method according to claim 9, wherein the single stranded PNA is selected from the group consisting of the sequences of SEQ ID NOS: 2, 16, and 17 and a complementary sequence thereof.

20. 12. A method according to claim 9, wherein the measuring step is carried out by using a surface plasmon resonance biosensor.

13. A method according to claim 12, wherein the single stranded PNA is immobilized on a measuring chip of the surface plasmon resonance biosensor.

25. 14. A method according to claim 9, wherein the measuring step is carried out at a temperature not exceeding 40°C.

30. 15. A method for detecting Esherichia coli O-157, which comprises the steps of:

- amplifying a genome DNA of Esherichia coli O-157 by PCR to obtain a double stranded DNA by using a sense primer selected from SEQ ID NOS. 4, 5, 7, 8, and 9 and an antisense primer of SEQ ID NO.6;
- hybridizing the double stranded DNA with a single stranded PNA selected from the group consisting of the sequences of SEQ ID